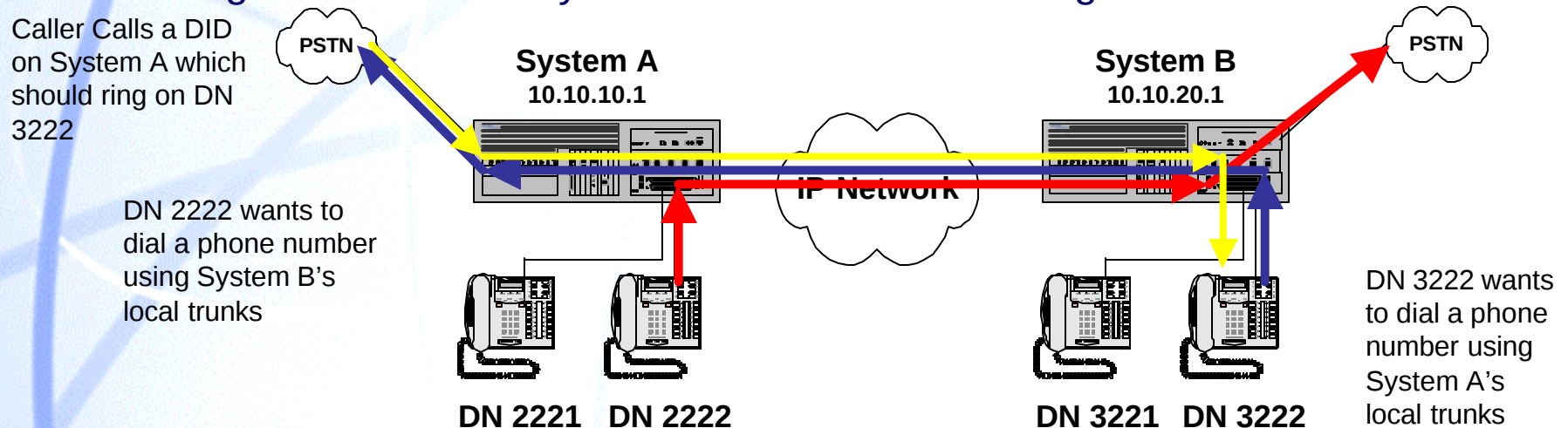


Tandem Trunking with BCM

Tandem Calls Introduction

With the introduction of Voice over IP and the Business Communications Manager (BCM) a key aspect for customers is the tandeming of trunks through systems to perform toll-bypass. The BCM is full capable to tandem trunks to IP and from IP as long as all configuration parameters are correct. The following examples will explain the configuration necessary in BCM to make tandeming function.

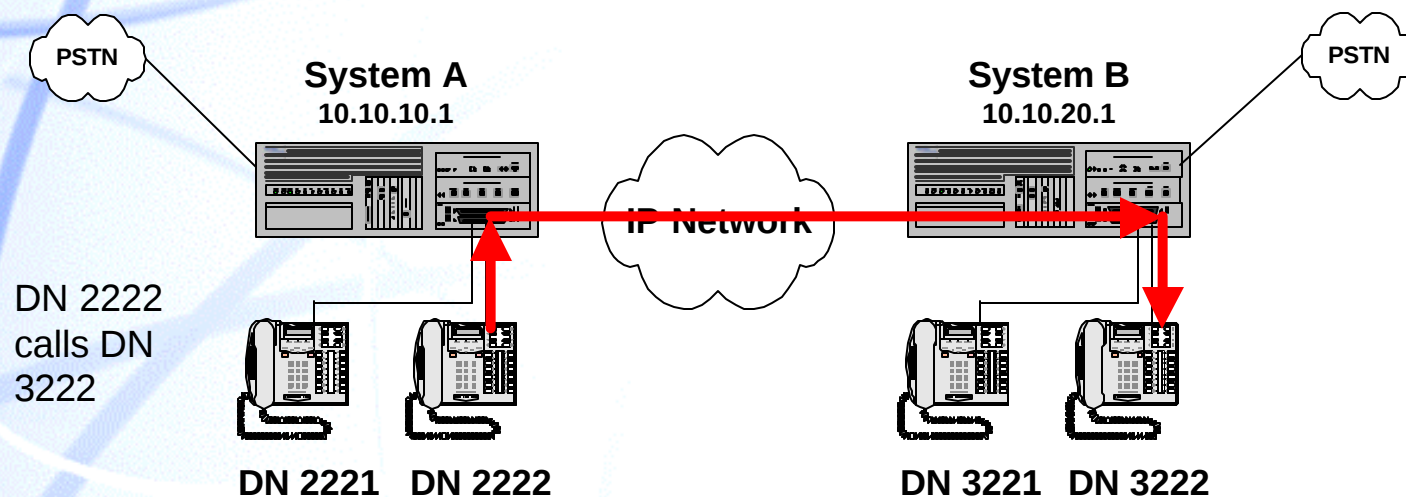


Type of Calls:

- Voice over IP call
- Voice over IP call to TDM Trunk Call
- TDM Trunk Call to Voice over IP Call

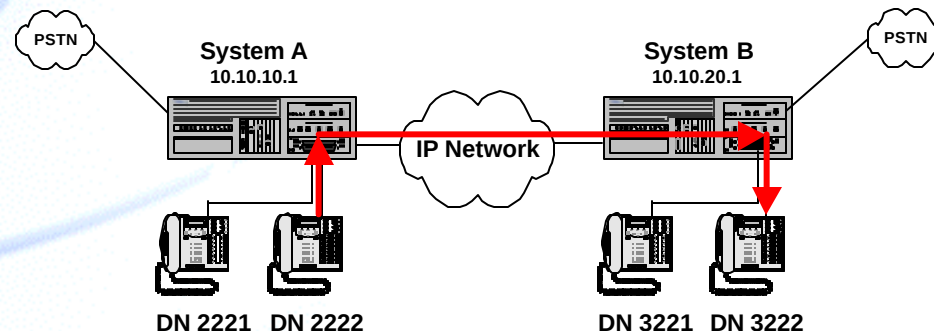
VoIP - VoIP

In order to tandem calls over using IP a good understanding of Voice over IP on BCM is required. The example below illustrates a station to station Voice over IP call.



Goal: Stations 2221, 2222, 3221 and 3222 on Systems A & B would like to use 4 digit dialing between systems with no access codes required.

VoIP – VoIP Configuration



Telephony Configuration

Terminals and Sets: Give all sets line pool access to the VoIP lines and assign all corresponding target lines.

Lines: Lines 1-8 place in a pool (Only add the number of VoIP trunks which are activated.)

Build a target line with received number and CLID set for each DN in use. (Target lines start at line 241.)

Services:

Routes: Add Route 001 which uses the VoIP pool and absorbs all.

Destination Codes: Add the lead digit of the far end system to call and set to use Route 001. (I.e. System A will add 3.)

Call Routing:

Private DN Length: This should be set at 4 in this example as we are using 4 digit dialing.

General Settings: Set the Business Name. (This allows for CLID to pass.)

VoIP Remote Gateway Configuration:

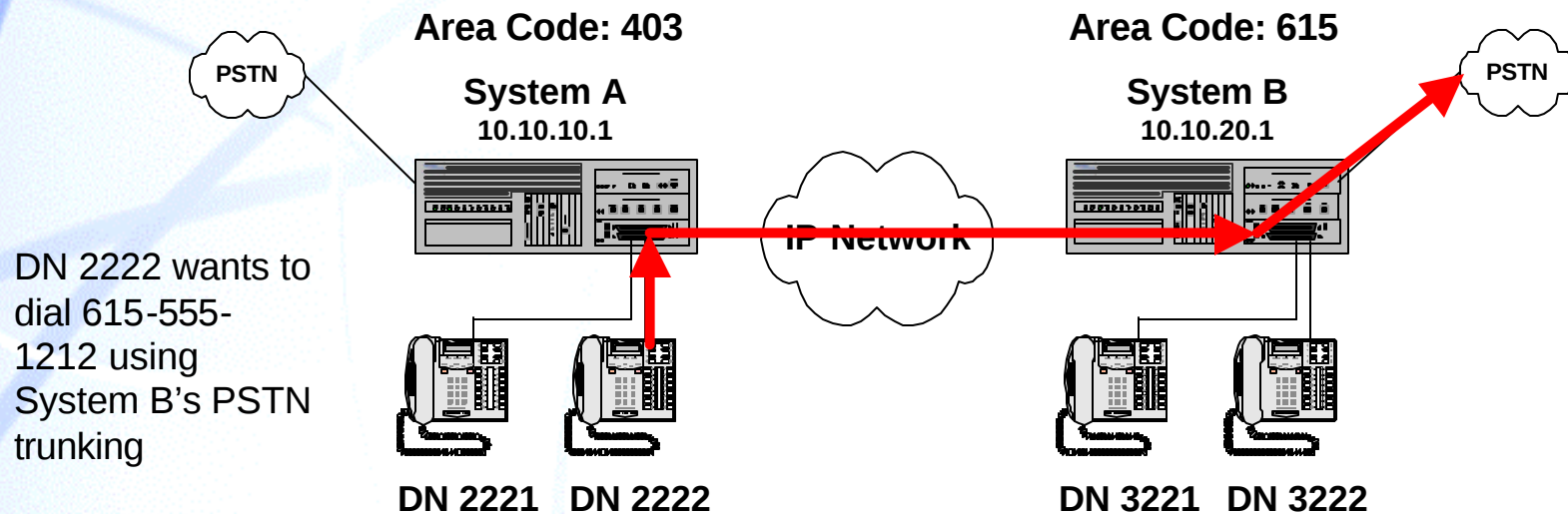
IP Address: 10.10.10.1 Destination Digits: 2

IP Address: 10.10.20.1 Destination Digits: 3

Note: The destination digits in the remote gateway table of Voice over IP are not stripped and are sent along to the remote gateway.

VoIP – VoIP to TDM

Tandeming from VoIP to TDM trunks is a great application to bypass toll charges. In the following example a tandem VoIP to TDM call is illustrated:



Goal: For all 615 area codes System A DN's would like to use the TDM trunking in System B. Both systems use 9 as a dialing prefix to access the PSTN.

VoIP – VoIP to TDM Configuration System A

General Configuration

Configure the systems to communicate via VoIP and be able to make PSTN calls from System B using its PSTN trunking.

Telephony Configuration

System A

Call Routing:

Routes: Route 001 VoIP Pool DN Type: Private
Route 002 VoIP Pool DN Type: Public
Route 003 TDM Pool DN Type: Public

Destination Codes: 3 Normal: 001 Absorb: 0
91615 Normal: 002 Absorb: 0
9161A Normal: 003 Absorb: 0
916A Normal: 003 Absorb: 0
91A Normal: 003 Absorb: 0
9A Normal: 003 Absorb: 0

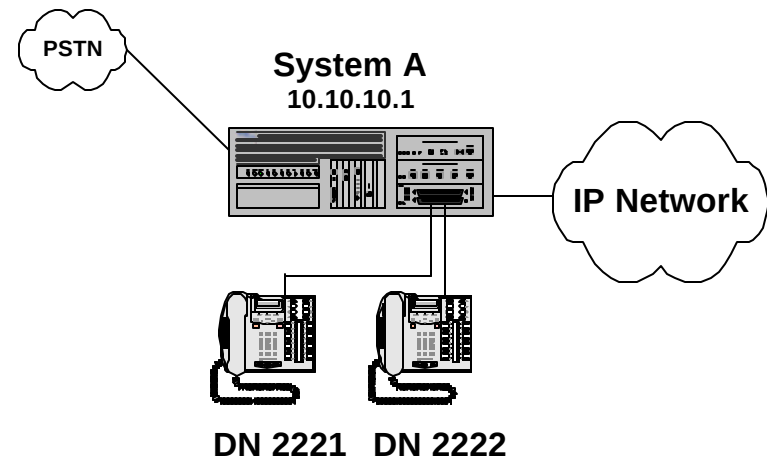
System Programming:

Dialing Plan: Private DN Length: 4
Public DN Length: Needs to be adjusted by one for all prefixes to account for the 9.

VoIP Remote Gateway Configuration:

Name: SystemB IP Address: 10.10.20.1 Destination Digits: 3 9

Note: For multiple entries of destination digits simply use spaces between values. Do not add a separate Remote Gateway entry.



VoIP – VoIP to TDM Configuration System B

Telephony Configuration System B

Call Routing:

Routes: Route 001 VoIP Pool DN Type: Private
Route 002 TDM Pool DN Type: Public
Destination Codes: 2 Normal: 001 Absorb: 0
9 Normal: 002 Absorb: 0

System Programming:

Dialing Plan: Private DN Length: 4

Public DN Length: Needs to be adjusted by one for all prefixes to account for the 9.

Access Codes: Private Access Code: 9 (Needs to be the 1st digit coming over the IP link.)

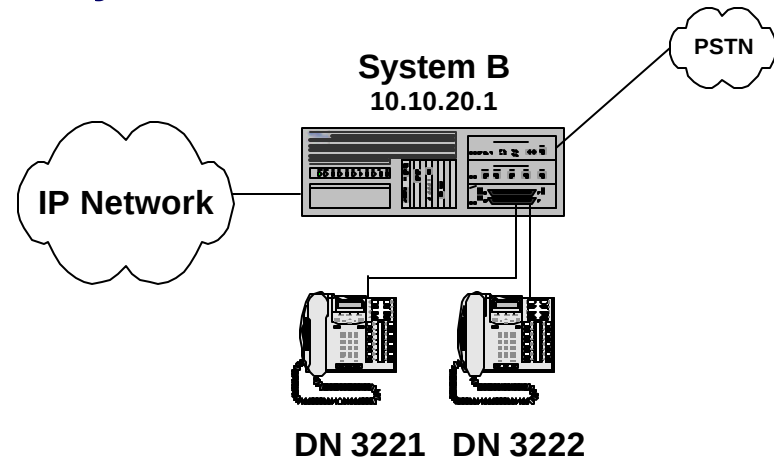
Remote Access: Remote Access Packages: Build a Package which has Pool access for the TDM trunks

Lines: General Settings Add the VoIP lines to the Remote Access Package Built Above.

VoIP Remote Gateway Configuration:

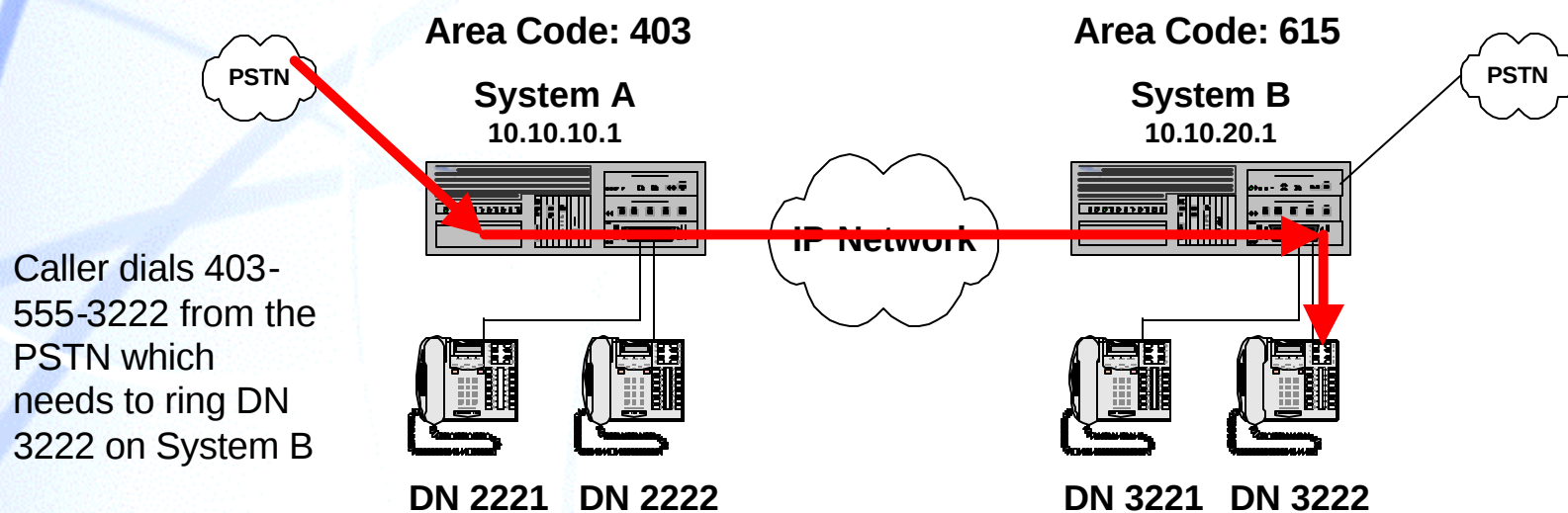
Name: SystemA IP Address: 10.10.10.1 Destination Digits: 2

Note: For multiple entries of destination digits simply use spaces between values. Do not add a separate Remote Gateway entry.



TDM – VoIP to VoIP

Tandeming from TDM to VoIP trunks is a great application to bypass toll charges. In the following example a tandem TDM to VoIP call is illustrated:



Goal: System B has DN's which wish to have DID numbers from the PSTN of System A.

VoIP – VoIP to TDM Configuration System A

General Configuration

Configure the systems to communicate via VoIP and be able to make PSTN calls from System B using its PSTN trunking.

Telephony Configuration

System A

Call Routing:

Routes: Route 001 VoIP Pool DN Type: Private
Destination Codes: 3A Normal: 001 Absorb: 0
32A Normal: 001 Absorb: 0
322A Normal: 001 Absorb: 0

Note: The destination code for the tandem call must be the same length as the received digits.

System Programming:

Dialing Plan: Private DN Length: 4

Access Codes: Private Access Code: 3 (Needs to be the 1st digit coming over the IP link.)

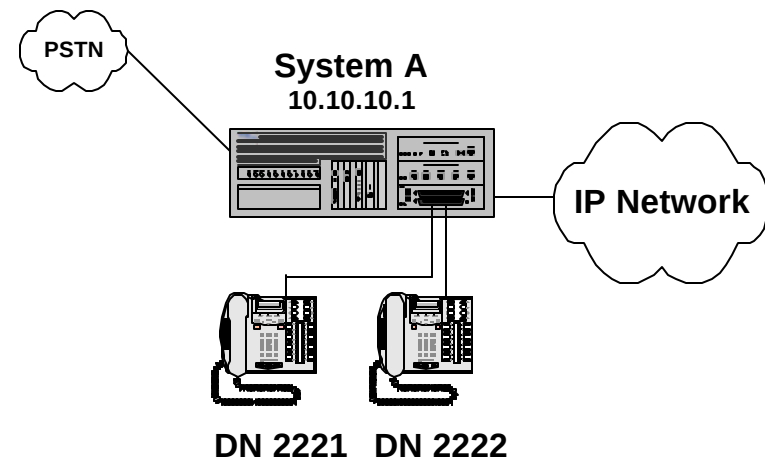
Remote Access: Remote Access Packages: Build a Package which has Pool access for the VoIP trunks

Lines: General Settings Add the TDM lines to the Remote Access Package Built Above.

VoIP Remote Gateway Configuration:

Name: SystemB IP Address: 10.10.20.1 Destination Digits: 3

Note: For multiple entries of destination digits simply use spaces between values. Do not add a separate Remote Gateway entry.



VoIP – VoIP to TDM Configuration System B

The following is all that is required at System B

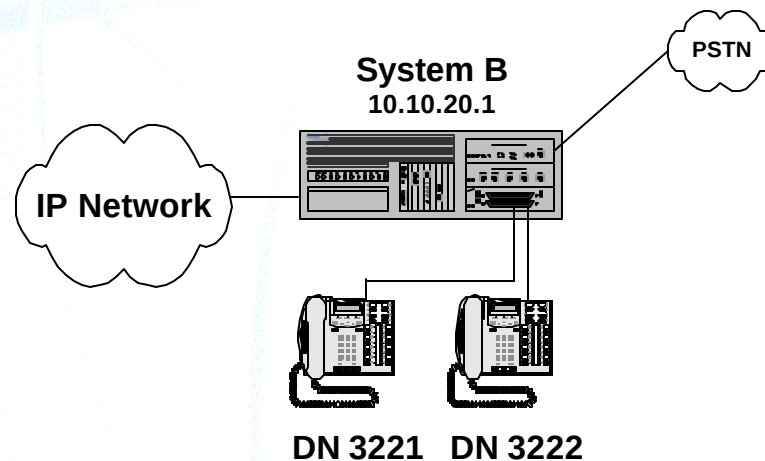
Telephony Configuration

System B

System Programming:

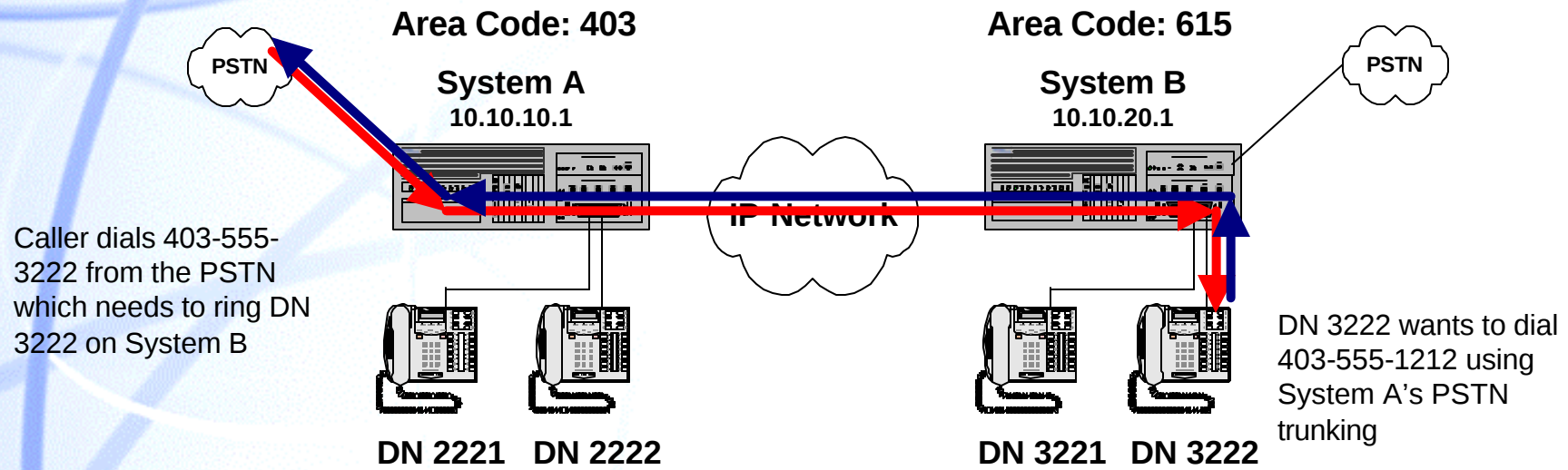
Dialing Plan: Private DN Length: 4

Lines: Have a target line with received number 3222 assigned to DN 3222.



Tandem Both Directions

Tandeming from both TDM to IP and vice versa is a great application for centralizing all PSTN trunking. In the following example a tandem in both directions is illustrated:



Goal: System B has DN's which wish to have DID numbers from the PSTN of System A & System B's sets wish to use System A's PSTN for outgoing calls with an area code of 403.

Tandem Both Directions Configuration System A

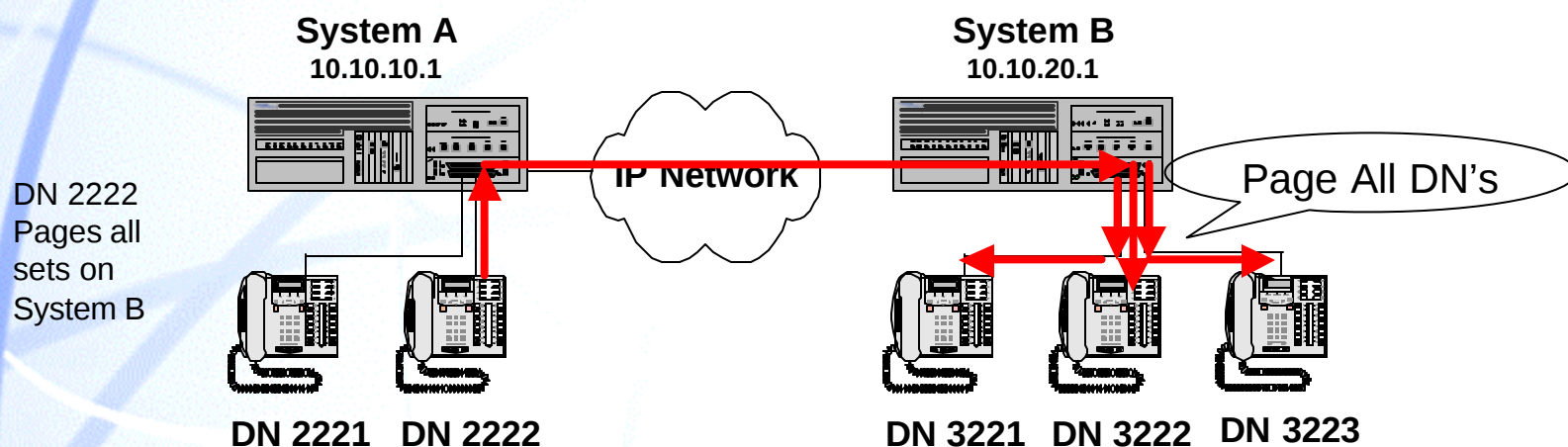
TBD

Tandem Both Directions Configuration System B

TBD

Paging Support

Another application which works with Voice over IP is paging. With this application each site may page the other systems internal sets or external paging equipment.



Goal: System A wishes to page all the sets in System B.

Paging Configuration System A

General Configuration

Configure the systems to communicate via VoIP.

Telephony Configuration

System A

Call Routing:

Routes: Route 001 VoIP Pool DN Type: Private
Destination Codes: 3 Normal: 001 Absorb: 0

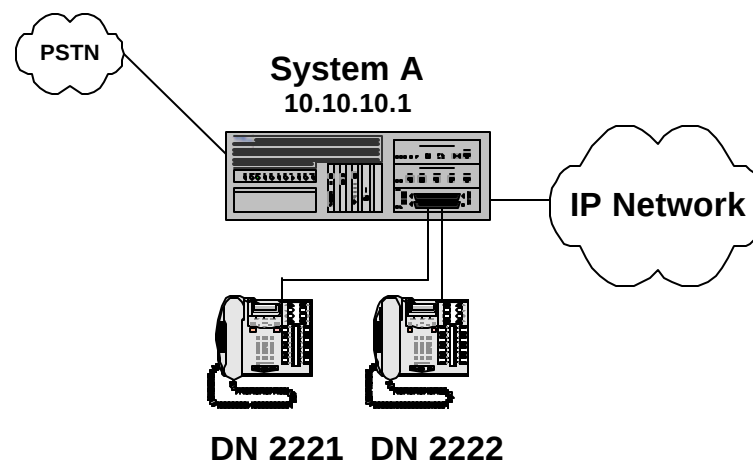
System Programming:

Dialing Plan: Private DN Length: 4

VoIP Remote Gateway Configuration:

Name:	SystemA	IP Address:	10.10.10.1	Destination Digits:	2 9
Name:	SystemB	IP Address:	10.10.20.1	Destination Digits:	3

Note: For multiple entries of destination digits simply use spaces between values. Do not add a separate Remote Gateway entry.



Paging Configuration System B

General Configuration

Configure the systems to communicate via VoIP.

Telephony Configuration

System A

System Programming:

Dialing Plan: Private DN Length: 4

Access Codes: Auto DN: 3500 or DISA DN: 3500 (See Note Below)

Remote Access: Remote Access Packages: Build a Package which gives Paging access to the VoIP trunks

Lines: General Settings Add the VoIP lines to the Remote Access Package Built Above.

VoIP Remote Gateway Configuration:

Name: SystemA IP Address: 10.10.10.1 Destination Digits: 2 9

Name: SystemB IP Address: 10.10.20.1 Destination Digits: 3

Note: For multiple entries of destination digits simply use spaces between values. Do not add a separate Remote Gateway entry.

How To Page: User on System A dials 3500 and when they here dial tone they dial:

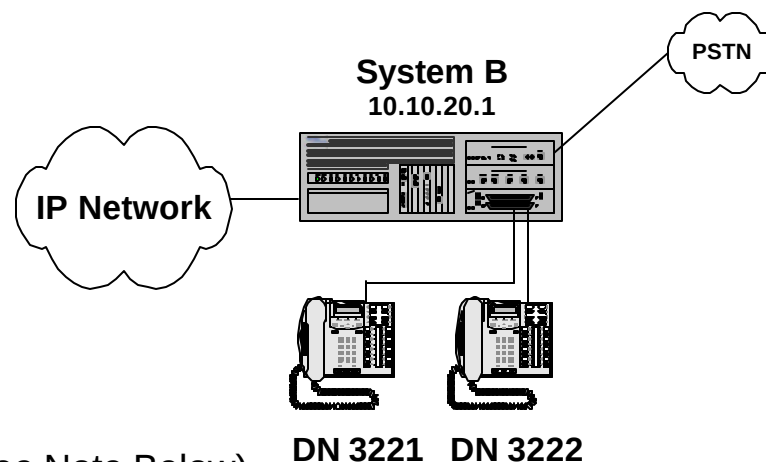
*610 - Internal Paging

*62 - External Paging

*630 - All Page

Where 0 is all page zones. If 1 is pressed only page zone 1 is alerted.

Notes: The Auto DN has no security around it and will deliver standard dial tone where the DISA DN delivers stutter dial tone and requires a Class of Service password. As well the Auto DN and DISA DN cannot conflict with any other code that is accessible through the intercom. (I.e. park prefix, line pool codes, destination codes, etc..)



Key Programming Tips

- CLID
- Public and Private DN Length
- Destination Digits
- Tromboning